

Remarks

These Remarks are in reply to the Office Action mailed February 2, 2004.

Claims 1-30 were pending in the Application prior to the outstanding Office Action. Claims 17-19 were previously withdrawn. In the Office Action, the Examiner rejected Claims 1-10, 13-16, 20-24, and 27-29, and objected to Claims 11-12, 25-26, and 30 solely as being dependent upon a rejected base claim. The present Response cancels Claims 2, 3, 9 and 27, amends Claims 1, 4, 6, 7, 10, 13, 20-22, 28, 29 and 30, and adds new Claim 31, leaving for the Examiner's present consideration Claims 1, 4-8, 10-16, 20-26, 28-31. Reconsideration of the rejections is requested.

I. REJECTION UNDER 35 U.S.C. §102(B) OVER *HENLEY* (U.S. PATENT 5,657,073)

Claims 20 and 22

The Examiner rejected Claims 20 and 22 under 35 U.S.C. §103(b) as unpatentable over *Henley*. Applicants respectfully traverses the rejection.

In the Office Action, the Examiner states that regarding Claim 20, *Henley* discloses “an image combining mechanism (16) configured to combine at least two of images captured from the set of cameras into a composite image (see col.4, lines 34-57).” See OA, page 6. However, *Henley* fails to disclose “the image combining mechanism including: a warping device configured to warp patches of each image into a common coordinate system of said composite image by applying a bilinear transformation”, as recited in Claim 20. *Henley* describes “capturing...overlapping fields of view...to merge such input signals, to create a single seamless output data stream 18 which represents a single image...” See col. 4, lines 37-45. However, *Henley* provides no details on how such a result is computationally or otherwise accomplished.

Since *Henley* fails to disclose “the image combining mechanism including: a warping device configured to warp patches of each image into a common coordinate system of said composite image by applying a bilinear transformation,” *Henley* cannot anticipate Claim 20 under 35 U.S.C. §102(b). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Henley* cannot anticipate dependent Claim 22 under 35 U.S.C. §102(b). Accordingly, Applicants respectfully request the withdrawal of this rejection.

II. REJECTION UNDER 35 U.S.C. §102(E) OVER *SZELISKI* (U.S. PATENT 6,044,181)

Claims 1-6, 9, 10 and 13-16

The Examiner rejected Claims 1-6, 9, 10 and 13-16 under 35 U.S.C. §102(e) as being anticipated by *Szeliski*. The Applicant requests cancellation of Claims 2, 3 and 9. Applicants respectfully traverse the rejection of Claims 1, 4-6, 10 and 13-16.

In the Office Action, the Examiner states that regarding Claim 1, *Szeliski* discloses “a multi-view image registration system capable of warping a set of images synchronously captured from a camera array onto a common coordinate system of a composite image.” However, *Szeliski* does not disclose

“applying a bilinear transformation to the selected pixels to transform the selected pixels from a coordinate system of the at least one image to a common coordinate system of a composite image”

as recited in claim 1.

The Examiner further states that *Szeliski* discloses “applying a transformative equation...the transformative equation is a bilinear transformation.” The Applicants respectfully disagree. *Szeliski* applies a *planar perspective transformation*, and does **not** apply a bilinear transformation. See e.g., col. 10, lines 11-67. Rather, *Szeliski* applies bilinear *interpolation* to resample an image during planar perspective warping. Bilinear interpolation can be applied to destination pixels after the source pixels have been warped to non-integer positions. Nowhere does *Szeliski* disclose bilinear *transformation*, as recited in Claim 1.

Further, it should be point out that *Szeliski* discloses a capturing a sequence of images, rather than synchronously capturing a set of images.

Since *Szeliski* fails to disclose “applying a bilinear transformation to the selected pixels to transform the selected pixels from a coordinate system of the at least one image to a common coordinate system of a composite image,” *Szeliski* cannot anticipate Claim 1 under 35 U.S.C. §102(e). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Szeliski* cannot anticipate dependent Claims 4-6, 10, and 13-16 under 35 U.S.C. §102(e). Accordingly, Applicants respectfully request the withdrawal of this rejection.

III. REJECTION UNDER 35 U.S.C. §103(A) OVER *SZELISKI* IN VIEW OF *HARDING* (U.S. PAT. 5,966,177)

Claims 7 and 8

The Examiner rejected Claims 7 and 8 under 35 U.S.C. §103(a) as unpatentable over *Szeliski* in view of *Harding*. Applicants respectfully traverse the rejection.

For the reasons given above in Section II, Applicants assert that *Szeliski* fails to teach or suggest “applying a bilinear transformation to the selected pixels to transform the selected pixels from a

coordinate system of the at least one image to a common coordinate system of a composite image,” as recited in Claim 1. *Harding* fails to remedy this deficiency. *Harding* describes an image display apparatus for controlling the intensity of an image. Nowhere does *Harding* teach or suggest “applying a bilinear transformation to the selected pixels to transform the selected pixels from a coordinate system of the at least one image to a common coordinate system of a composite image,” as recited in Claim 1.

Since *Szeliski* in view of *Harding* fails to teach or suggest “applying a bilinear transformation to the selected pixels to transform the selected pixels from a coordinate system of the at least one image to a common coordinate system of a composite image,” *Szeliski* cannot render Claim 1 obvious under 35 U.S.C. §103(a). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Szeliski* cannot render dependent Claims 7 and 8 obvious under 35 U.S.C. §103(a). Accordingly, Applicants respectfully request the withdrawal of this rejection.

IV. REJECTION UNDER 35 U.S.C. §103(A) OVER *HENLEY* IN VIEW OF *SZELISKI*, IN FURTHER VIEW OF *HARDING*

Claims 21, 23 and 24

The Examiner rejected Claims 21, 23 and 24 under 35 U.S.C. §103(a) as unpatentable over *Henley* in view of *Szeliski* in further view of *Harding*. Applicants respectfully traverse the rejection.

For the reasons given above in Section I, Applicants assert that *Henley* fails to teach or suggest “the image combining mechanism including: a warping device configured to warp patches of each image into a common coordinate system of said composite image by applying a bilinear transformation”, as recited in Claim 20. *Szeliski* and *Harding* fails to remedy this deficiency. For the reasons given above in Section II, *Szeliski* fails to teach or suggest a device configured to “warp patches of each image into a common coordinate system of said composite image by applying a bilinear

transformation” as described in Claim 20. For the reasons given above in Section III, *Harding* fails to teach or suggests “warp[ing] patches of each image into a common coordinate system of said composite image by applying a bilinear transformation” as described in Claim 20.

Since *Henley* in view of *Szeliski* in further view of *Harding* fails to teach or suggest “the image combining mechanism including: a warping device configured to warp patches of each image into a common coordinate system of said composite image by applying a bilinear transformation,” *Henley* in view of *Szeliski* in further view of *Harding* cannot render Claim 20 obvious under 35 U.S.C. §103(a). Dependent claims have at least the features of the independent claim from which they depend; therefore, *Henley* in view of *Szeliski* in further view of *Harding* cannot render dependent Claims 21, 23 and 24 (which ultimately depend from Claim 20) obvious under 35 U.S.C. §103(a). Accordingly, Applicants respectfully request the withdrawal of this rejection.

V. REJECTION UNDER 35 U.S.C. §103(A) OVER *OLSON* (U.S. PAT. 5,170,182) IN VIEW OF *HENLEY*

Claims 27-29

The Examiner rejected Claims 27-29 under 35 U.S.C. §103(a) as unpatentable over *Olson* in view of *Henley*. Applicants request cancellation of Claim 27. Applicants respectfully traverse the rejection of Claims 28 and 29.

In the Office Action, the Examiner states that “regarding claim 30, the prior art does not teach or fairly suggest a method of registering a camera array...wherein the step of maintaining information comprises calculating a warped coordinate system...” *Olson* in view of *Henley* fails to teach or suggest all of the features of Claim 30. Claims 28 and 29 depend from Claim 30, therefore *Olson*

in view of *Henley* fails to teach or suggest all of the features of Claims 28 and 29, and therefore cannot render Claims 28 and 29 obvious under 35 U.S.C. §103(a). Accordingly, Applicants respectfully request the withdrawal of this rejection.

VI. ALLOWABLE SUBJECT MATTER

Claims 11, 12, 25, 26, and 30

Claims 11, 12, 25, 26 and 30 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Applicants have amended Claim 30 to include the limitations of the base claim and any intervening claims. However, in view of the arguments above, Claims 11, 12, 25 and 26 have been left in dependent form, and Applicants respectfully suggest that Claims 11, 12, 25, and 26 are no longer objectionable. Accordingly, the Applicants request that claims 11, 12, 25, 26, and 30 be allowed.

VII. ADDITIONAL CLAIMS

Claims 31

The newly added claim is, it is submitted, allowable over the cited art.

VIII. CONCLUSION


In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested. The

Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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By: 
Michael L. Robbins
Reg. No. 54,774

FLIESLER MEYER LLP
Four Embarcadero Center, Fourth Floor
San Francisco, California 94111-4156
Telephone: (415) 362-3800